



Defense Information Systems Agency

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Global Electromagnetic Spectrum Information System (GEMSIS)

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GEMSIS, PM
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Agenda

- **GEMSIS Overview**
- **GEMSIS Approach**
- **GEMSIS Increment 1**
- **GEMSIS Future Increments→Catalog of Services**
- **GEMSIS Communications**
- **Summary**

GEMESIS

Program Overview

- **Vision**

- To be the premier provider of enterprise spectrum management capabilities and services supporting the needs of the Department of Defense and the warfighter.

- **Mission**

- Develop, deploy and sustain a program of integrated spectrum capabilities that will enhance the warfighter's ability to effectively and efficiently manage the electromagnetic battlespace to enable information superiority.

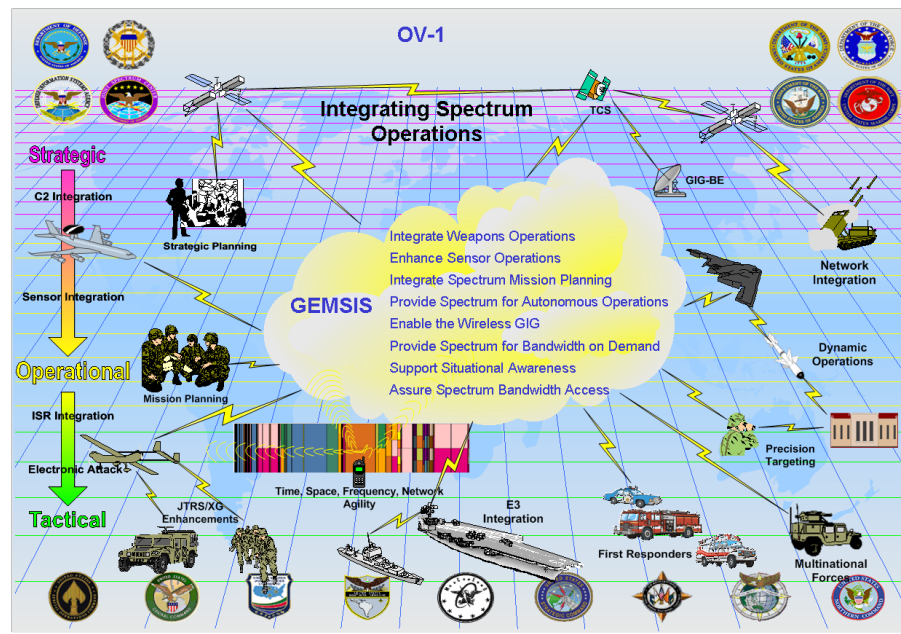
- **Acquisition Category (ACAT) III**

- **Milestone Decision Authority (MDA) — DISA Component Acquisition Executive (CAE)**

GEMISIS Overview

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- Transforms spectrum operations to a responsive and agile capability to request, assign, allocate, and deconflict portions of the electromagnetic spectrum
- End-to-end spectrum supportability & frequency assignment
- Software definable radio waveform spectrum management support
- Strategic spectrum management planning
- Modeling and simulation for mission planning, rehearsal, and acquisition
- Increased common picture of spectrum situational awareness of friendly and hostile forces



Concept

- Provide solutions to current spectrum management capability gaps → Initial Capabilities Document (ICD)
- Adopt existing capabilities, buy commercial capabilities, and/or create new capabilities
- Provide net-centric, interoperable, integrated and collaborative spectrum management capabilities
- Support net-centric data environment for spectrum information
- Leverage JC2 and Network-Centric Enterprise Services (NCES) infrastructure
- Accelerate warfighter's ability to effectively and efficiently use and manage the electromagnetic battle space to enable information superiority
- Deliver capabilities incrementally within the context of a streamlined and adaptive acquisition approach
- Fully Integrated, Networked, Decentralized, Adaptive Decision Superiority

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GEMSIS Approach

GEMSIS Increment 1

- Capabilities from Coalition Joint Spectrum Management Planning Tool (CJSMPT) Joint Capability Technical Demonstration (JCTD)
- Sustainment of capabilities from fielded Host Nation Spectrum Worldwide Database Online (HNSWDO) Version 3.1.2
- Evaluate other opportunities

GEMSIS Increment 2

- Analysis of Alternatives (AoA)

GEMSIS Increment 3, 4...

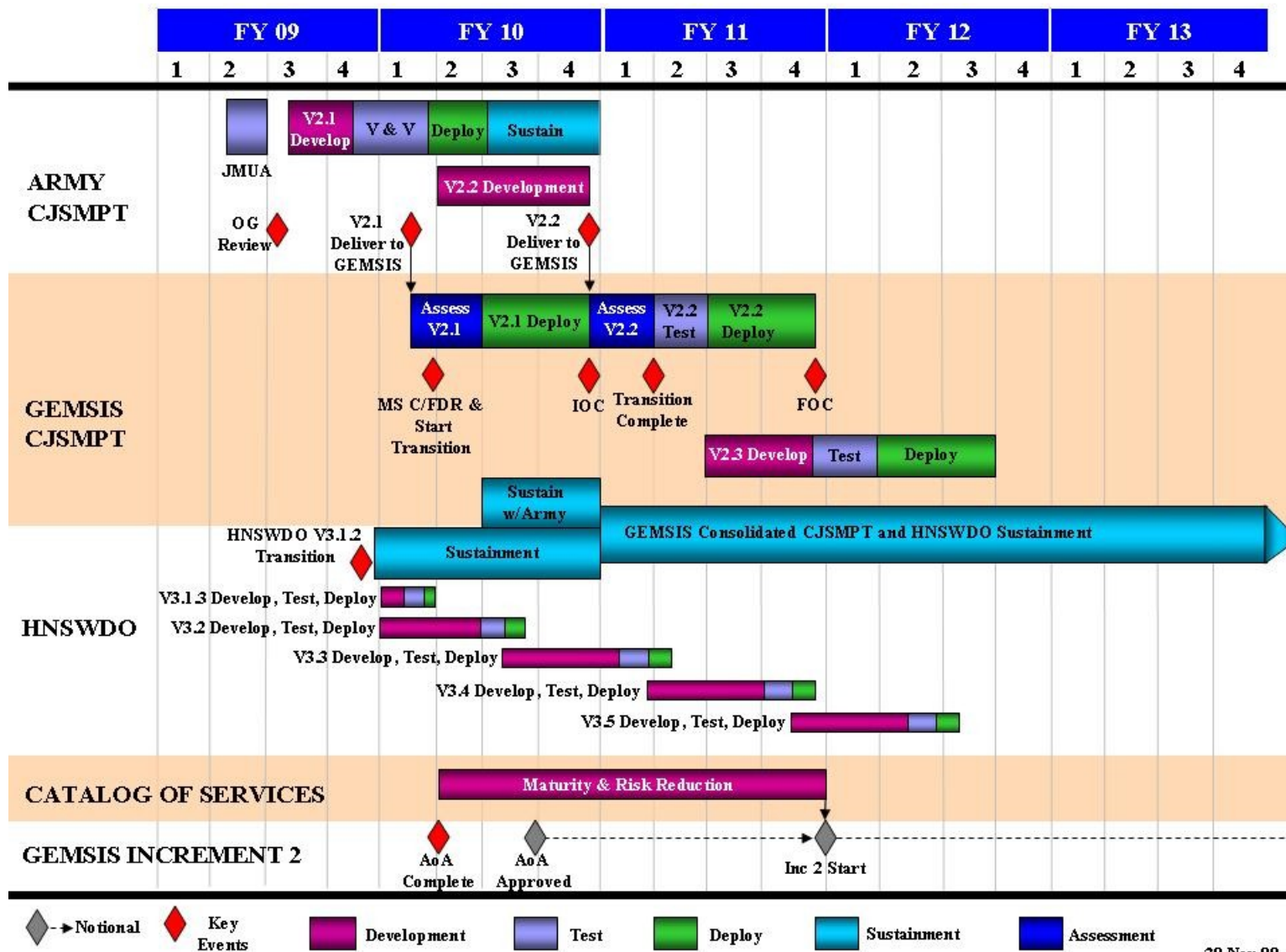
- Transform DoD spectrum management operations by providing joint, dynamic, responsive, and agile enterprise services and capabilities in support of warfighter needs and requirements
- Advance the GEMSIS operational value proposition to solidify GEMSIS as the spectrum solution provider for DoD
- Foster a dynamic, effective and efficient organization responsive to warfighter needs and requirements

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GEMSIS Schedule



30 Nov 09

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GEMSIS High-Level Conceptual Architecture

Users

COCOMs

MILDEPs

Coalition

Intel/EW

DoD
Agencies

Federal
Agencies

Leveraged DISA Services

APEX
GCCS-J
GCSS-J
MNIS
NCES
Spectrum XXI
Online

Information Exchange

Spectrum Situational Awareness
Frequency Availability
Interference Analysis
Coverage Analysis

Command & Control
Mission Planning
Position/Location/Direction
Messaging/Mediation
Service Discovery/Service
Security/Content Delivery

GEMSIS Catalog of Services

Spectrum Planning

Spectrum Situational Awareness

Spectrum Certification

Spectrum Supportability

Frequency Scheduling

Frequency Deconfliction

Interference Analysis and Reporting

Modeling & Simulation

Information Exchange

Spectrum Situational Awareness
Frequency Availability
Interference Analysis
Coverage Analysis

Spectrum Usage
Communications Plans
RF Engineering Analysis
Frequency Nomination

Leveraged External Services/Capabilities

AESOP
WIN-T
JTRS
FSMS

JSDR Data Services

External Data Services

GFM DI Data Service

EW Data Service

Coalition Data Service

Intel Data Service

BFT Data Service

NTIA Data Service

Spectrum Data Sources

JSDR

- Assignment
- Collected Emissions
- Platform Equipment
- Supportability
- Table of Allocations
- Equipment Parameters

External Data Sources

GFM DI

- Force Structure

EW

- CREW Loadsets
- CREW Measurement

Coalition

- Assignment
- Equipment Parameters
- Supportability

Intel

- JRFL
- E-space

BFT

- Blue Force Tracking

NTIA

- Assignment
- Supportability

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Why a Catalog of Services?

"Don't give us more tools. Make the tools we have easier to use and work better together."

(feedback from the Navy/Marine Spectrum Manager's Conference, 2008)

- Goal-oriented services
- Answers the statement: "I need to ..."
- GOOGLE-like search to find available spectrum operations services
- TurboTax-like wizards to walk the user through more complex tasks
- Provide decision makers with the right tools & information



Support the Warfighter

Leverage Net-Centric Services



- HNSWDO, JSDR already available
- Additional services added as GEMSIS adopts, buys, or creates services across its seven domains
- Enable others to extend the catalog

Automate Common SM Tasks

- Remove/reduce human bottlenecks
- Consistent task handling
- Leverage all available services and databases to provide best and fastest results



Reduce Overhead

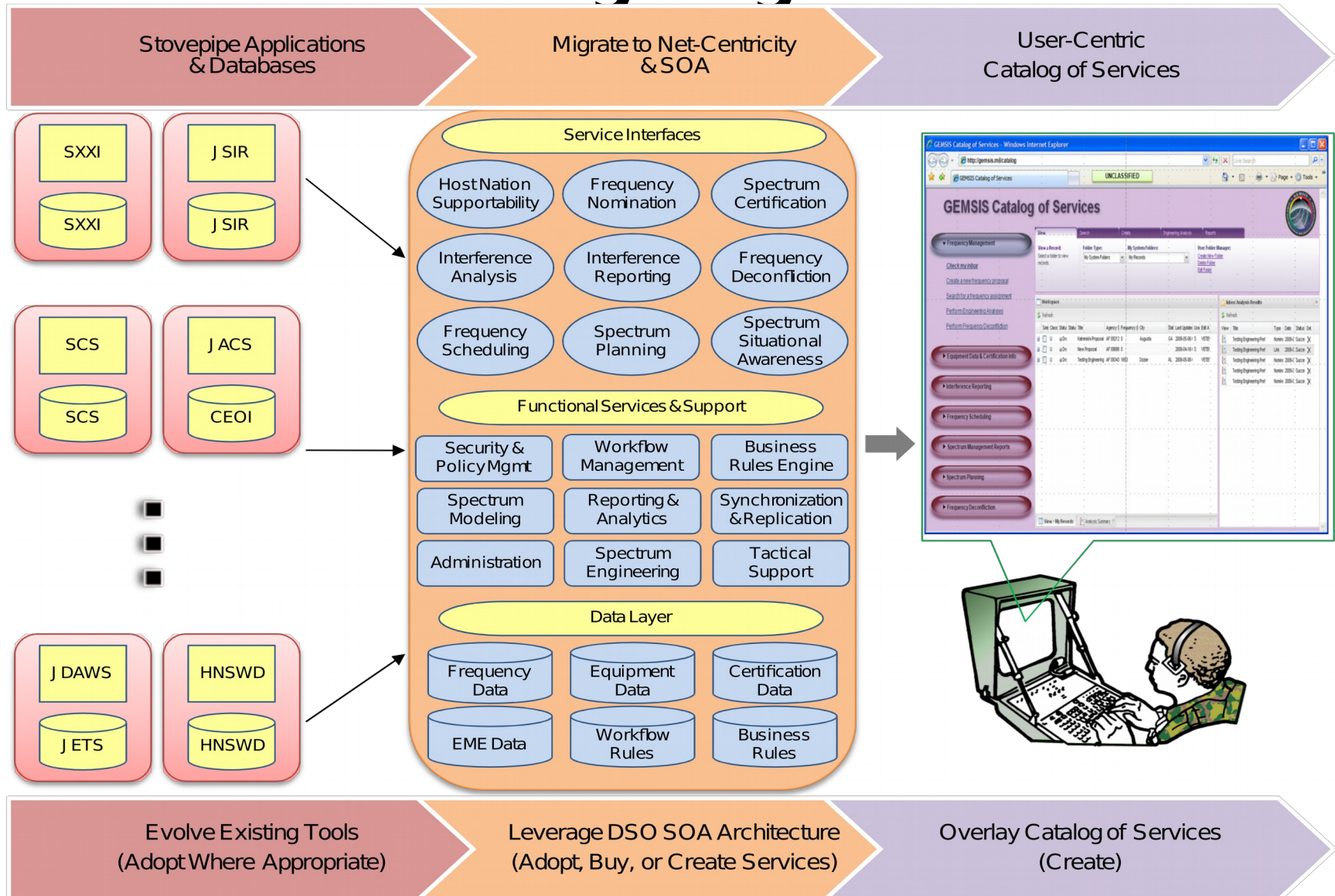
- Fewer middlemen
- Streamline processes
- Provides a consistent one-stop interface for the warfighter user





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The Catalog is the Next Step in an Ongoing Evolution



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GEMSIS Summary

- **Enable operational forces through significantly improved spectrum operations**
- **Provide net-centric, interoperable, integrated and collaborative Joint spectrum management capabilities**
- **Increase and accelerate spectrum efficiency and operational effectiveness**
- **Adopt a common spectrum data exchange format, minimize data duplication and enhance spectrum common operational picture**
- **Implement standard web services and net-centric solution**

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ur Next Wave in Transforming Spectrum Capabilit



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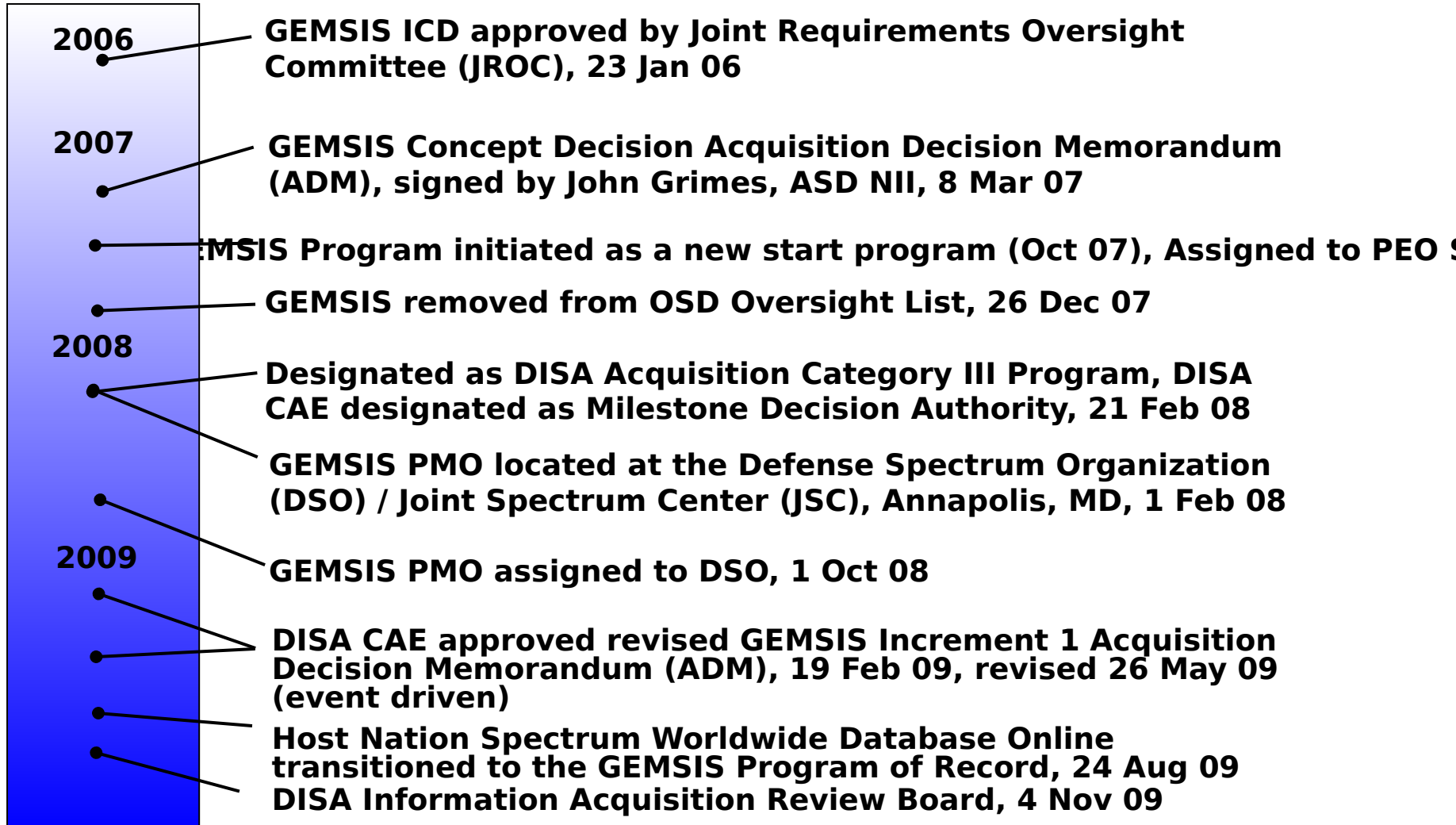
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GEMSIS History





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GEMSIS Increment 1

HNSWDO

- **HNSWDO is a web-based capability that:**
 - **Facilitates warfighter deployment and communications by providing worldwide visibility of host nation supportability of Radio Frequency (RF) spectrum dependent equipment.**
 - **Automates distribution of host nation coordination requests and Combatant Command submission of host nation supportability comments, reducing the time required to manage the process.**
 - **Enables managers to determine the historical supportability of other (or similar) systems in the same band.**
 - **Provides informed design decision-making concerning frequency bands, thereby mitigating the risk of acquiring potentially unsupportable RF dependent systems.**
- **HNSWDO to transition from the Joint Spectrum Center to GEMSIS PMO in Aug 09 for operations and sustainment.**

CJSMPT

- **Define Electromagnetic Battlespace (EMB)**
 - **Create, refine, and manage the EMB in AOR/AOI**
 - **Create Task Force from specific and generic forces**
 - **View, manage, and update spectrum requirements in AOR/AOI**
- **Spectrum Requirements Analysis**
 - **Recommend required allotment based on modeling and simulation of EMB**
 - **Suggest specific frequencies for nomination and assignment taking into account user defined and/or host nation allocation tables**
 - **Determines and optimizes spectrum requirements then generates re-use plan**
- **Tactical Deconfliction**
 - **Predict incidents of tactical Interference prior to mission execution**
- **Tactical Interference Mitigation**
 - **Generate modifications to spectrum plan to minimize interference**
- **Collaboration**
 - **Exchange data via the SKR Data Exchange**

GEMSIS Program Commitments

Communications:

- Ensure the community is involved
- Regular communications with community
- Newsletter: One-page items of interest
- Web Site Phase 2 released
 - <https://www.us.army.mil/suite/page/568195>
 - Easier to navigate
 - More information
 - Collaboration capability added
 - Ask GEMSIS
- Monthly telecon forum
- Annual Customer Conference
- Attendance at other conferences/workshops/symposiums
- Visit users (COCOMs and Services)

Requirements:

- Requirements Review Board process
- Validate requirements with users and community
- Prioritize requirements based on mission criticality, Key Performance Parameters (KPPs) and funding
- Investigate other systems for requirement fulfillment
- Configuration Management Board
 - Formal means for transforming spectrum management requirements into version releases

Sustainment:

- Establish GEMSIS helpdesk for timely response to the users
- Leverage current processes to streamline, integrate and reduce costs
- Create web-based training
- Utilize DKO for communication on system user manuals and software release notes

Customer Service:

- Provide quick and accurate information
- Establish a partnership with the community
- Establish customer outreach program
- Perform Post Implementation Reviews
- Participate in Spectrum Data Community of Interest (COI)